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Three new species of *Humicola* from the Qinghai-Tibet Plateau Area, China

Yue-Ming Wu & Tian-Yu Zhang*

Department of Plant Pathology, Shandong Agricultural University, Taian, 271018, China
Key Laboratory of Agricultural Microbiology, Shandong Province, Taian, 271018, China
*Correspondence to: *tyzhang1937@yahoo.com.cn*

Abstract — Three new species from soil in China, *Humicola chlamydospora, H. tuberculata,* and *H. verruculosa,* are described and illustrated. The type specimens (dried cultures) and living cultures are deposited in the Herbarium of Shandong Agricultural University, Plant Pathology (HSAUP). Isotypes are kept in the Herbarium of Institute of Microbiology, Academia Sinica (HMAS).

Key words — dematiaceous hyphomycetes, soil fungi, taxonomy

Introduction

During a survey of dematiaceous soil hyphomycetes in China, several unusual species of *Humicola* were collected, of which three are described and illustrated here as new. *Humicola,* a genus established by Traaen (1914), is characterized by possession of micronematous or semi-macronematous conidiophores that are cylindric or slightly inflated. The conidiogenous cells swell apically to form globose to ovoid aleuriospores. Of the 66 taxa listed by Index Fungorum (2012), many are infraspecific, and Seifert et al. (2011) estimate that the genus may contain only 20 valid species.

Cultures were examined after 7 days growth on potato dextrose agar (PDA) (De Bertoldi 1976).

Humicola chlamydospora Y.M. Wu & T.Y. Zhang, **sp. nov.** Fig. 1

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Differs from *Humicola alopallonella* by its multinucleate conidia and from *H. nivea* by its smaller and smooth conidia.

Type: China, Tibet: Xigaze, from mountain soil, altitude 2300 m, 14 Sept. 2007, Y.M. Wu (**Holotype** HSAUP $II_{07}1337$; **isotype** HMAS 196265).

Etymology: The epithet refers to the chlamydospores of this species.

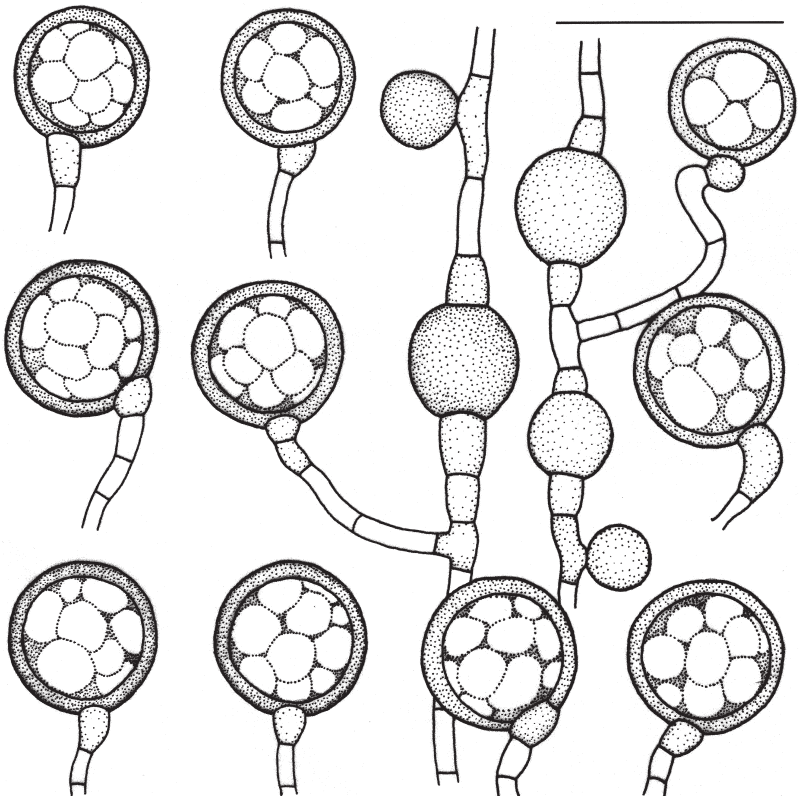

Fig. 1. *Humicola chlamydospora* (ex holotype).
Conidia, conidiophores, conidiogenous cells and intercalary chlamydospores. Scale bars = 25 μm.

Colonies on PDA at 26°C for 7 days 5–7 cm diam., effuse, velvety, brown to dark brown. Mycelium superficial or immersed; hyphae branched, septate, smooth, subhyaline to light brown, 3–4 μm wide. Conidiophores subhyaline to light brown, mononematous, micronematous, septate, smooth, 5–7 μm wide. Conidia solitary, globose, smooth, golden yellow, thick-walled, (16–)18(–20) μm diam., containing 8–10 oil droplets. Chlamydospores globose, intercalary. Phialospores not seen.

Comments — Morphologically, *H. chlamydospora* resembles *H. alopallonella* Meyers & R.T. Moore (Meyers & Moore 1960) and *H. nivea* De Bert. (De Bertoldi 1976). The new species differs from *H. alopallonella* in having many oil droplets in the conidia and from *H. nivea*, which has rough walled, smaller conidia (8.9–9.4 μm diam.).

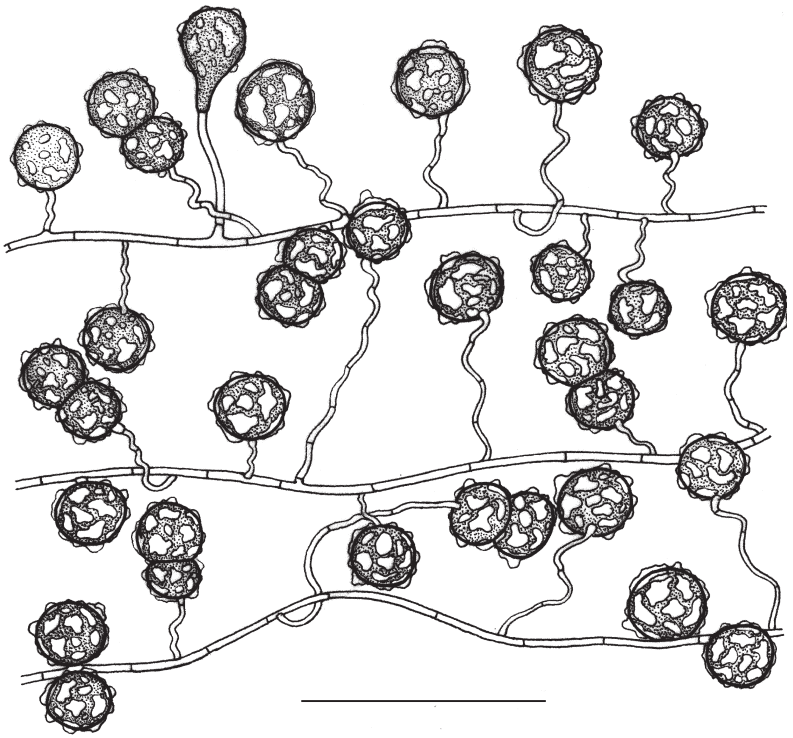

Fig. 2. *Humicola tuberculata* (ex holotype).
Conidia, conidiophores and conidiogenous cells. Scale bars = 25 μm.

Humicola tuberculata Y.M. Wu & T.Y. Zhang, **sp. nov.** Fig. 2

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Differs from *Humicola nivea* and *H. rugosa* by its tuberculate conidia with only a single nucleus.

Type: China, Tibet: Shannan, from grassland soil, altitude 3500 m, 9 June 2007, Y.M. Wu (**Holotype** HSAUP II $_{07}$0509; **isotype** HMAS 196266).

Etymology: The epithet refers to the tuberculate conidia of this species.

Colonies on PDA at 26°C for 7 days 4–5 cm diam., effuse, velvety, greyish brown to dark brown. Mycelium superficial or immersed; hyphae branched, septate, smooth, subhyaline to light brown, 1–2 μm wide. Conidiophores subhyaline, mononematous, micronematous, septate, smooth, 1–2 μm wide. Conidia solitary, globose, tuberculate, golden-yellow, thin-walled, (6–)8(–9) μm diam. Phialospores not seen.

Comments — *Humicola tuberculata* resembles *H. nivea* and *H. rugosa* De Bert. (De Bertoldi 1976) in conidial size but differs from these two species in its tuberculate conidia lacking oil droplets.

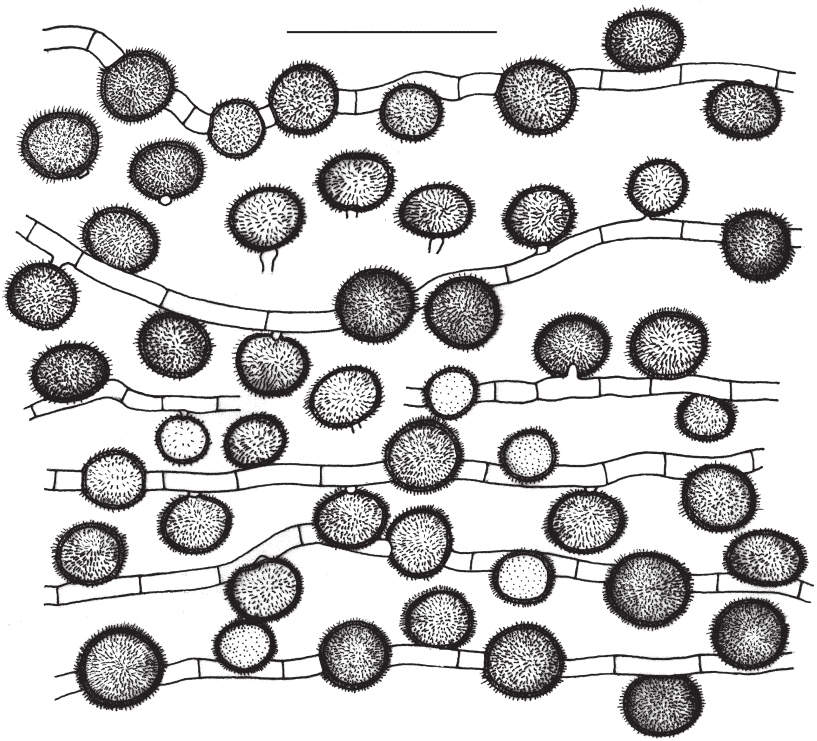

Fig. 3. *Humicola verruculosa* (ex holotype).
Conidia, conidiophores and conidiogenous cells. Scale bars = 25 μm.

Humicola verruculosa Y.M. Wu & T.Y. Zhang, **sp. nov.** Fig. 3

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Differs from *Humicola dimorphospora* and *H. piriformis* by its larger, ellipsoidal and verrucose conidia.

Type: China, Tibet: Xigaze, from a mountain soil, altitude 2300 m, 14 Sept. 2007, Y.M. Wu (**Holotype** HSAUP II $_{07}$1332; **isotype** HMAS 196264).

Etymology: The epithet refers to the verruculose conidia.

Colonies on PDA at 26°C for 7 days 4–5 cm diam., effuse, velvety, brown to dark brown. Mycelium superficial or immersed: hyphae branched, septate, smooth, subhyaline to light brown, 3–5 μm wide. Conidiophores reduced to conidiogenous cells on side of hyphae, mononematous, micronematous, subhyaline to light brown, smooth, 4–7 μm wide. Conidia solitary, ellipsoidal or ovoid, with a scar at the base, produced singly on the sides of hyphae or on short lateral conidiophores, verruculose, pale yellowish brown to yellowish brown, 8–12 × 5–8 μm. Chlamydospores globose, intercalary. Phialospores not seen.

Comments — Morphologically, *H. verruculosa* is similar to *H. dimorphospora* Roxon & S.C. Jong (Roxon & Jong 1974) and *H. piriformis* De Bert. (De Bertoldi 1976), but its conidia are larger than those of *H. dimorphospora* (3–5 μm diam.) and *H. piriformis* (7–7.2 × 7.1–7.5 μm). Our new species is additionally distinguished from those two species by its ellipsoidal conidia with verrucose conidial wall.

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